Analysis of Flooding Discharge in Seoul-Metropolitan Area based on Return Periods

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Abstract

In recent years, urban floods have become more frequent, causing significant harm to society and resulting in substantial losses to the national economy and people's lives and property. To assess the impact of floods on people's safety and property in Seoul, annual precipitation data from 1980 to 2020 was analyzed for return periods of 5, 10, 20, 50, and 100 years. A rainfall runoff simulation model for Seoul was established using HEC-HMS and HEC-RAS models. The study revealed that at a 5-year return period, water began to accumulate in Seoul, but it was not severe. However, at a 10-year return period, the water accumulation was relatively serious, and inundation began to occur. At a 20-year return period, there was serious water accumulation and inundation in Seoul. During a 50-year return period, Seoul suffered from severe inundation in commercial areas, resulting in substantial losses to the local economy. The findings indicate that Seoul City faces high flood risks, and measures should be taken to mitigate the impact of floods on the city's residents and economy.

Keywords : Urban flood, Return period, HEC-HMS, HEC-RAS, Rainfall and Flood

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